

SECONDARY AORTODUODENAL FISTULA

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Abstract- Secondary aortoenteric fistula (SAF) is an uncommon but very important complication of abdominal aortic reconstruction. The complication often occurs months to years after aortic surgery. The clinical manifestation of the aortoenteric fistula is always upper gastrointestinal bleeding. Treatment of the disease is early surgical intervention. If operative treatment is not performed promptly, the mortality is high. We present a case of secondary aortoduodenal fistula found 6 years after aortic reconstructive surgery, with the clinical presentation of upper gastrointestinal bleeding. On Immediate exploratory laparotomy, proximal part of abdominal Aorta was clamped. Duodonorhaphy and aortic reconstruction with patch graft at the proximal suture line of aortic prosthesis was performed. Fortunately there was no pus, so tissue culture was not done. The intervention was concluded with an omentoplasty in order to protect the patch graft and to separate it from duodonorhaphy. Patient did well after the surgical management. Because of the increasing number of elective aortic aneurysm repairs in the aging population, it is likely that more patients with secondary aortoenteric fistula will present to the clinical physicians in the future. So, a high index of suspicion is necessary for prompt diagnosis and treatment of this actually life threatening event.

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INTRODUCTION

Sudden hematemesis is a life threatening emergency which involves physician's attention towards various causes of gastrointestinal bleeding. Aortoenteric fistula is a very rare cause of gastrointestinal bleeding (1).

Communications between the aorta and the intestine resulting from disease at either site are referred to as aortoenteric fistulas. Fistula formation between the aorta and the intestinal tract was first

described in 1839 in reference to a man with a pulsating tumor and a discharge of bloody stool, who died suddenly. At autopsy, it was noted that the jejunum had adhered to the aneurismal bag and that sac had ulcerated into the intestine (2).

Fistulas occurring after aortic reconstructive surgery, also called aortic graft-enteric fistulas, are considered secondary aortoenteric fistulas. Before 1960, the most common cause of abdominal aortoenteric fistulas was aortic aneurysm, followed by infectious aortitis due to syphilis or tuberculosis (3). However, over the past three decades or so, erosion of the intestine by prosthetic vascular grafts has become a much more common cause, with an incidence of up to 4%. (4)

The complication often occurs months to years after the original surgery. Bastounis *et al.* reported that the mean interval from the initial operation to

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the onset of upper gastrointestinal bleeding was 32 months (5). The 20 years experience with secondary aortoenteric fistula at the Johns Hopkins Medical Institution showed the average to be 2.8 year (6).

The first reported secondary aortoenteric fistula was reported by Brock in a case involving an aortic homograft and the duodenum (7). In 1956, Clayton *et al.* presented the first aortoenteric fistula caused by a prosthetic graft of the aorta (8). In 1958, Mackenzie *et al.* demonstrated the first successful repair of a secondary aortoenteric fistula between a synthetic graft and the intestine (9).

Due to the anatomical proximity, the majority of cases involve the duodenum, with the proximal suture line of an aortic prosthesis. Prompt diagnosis and surgical intervention is the only possible treatment that preserves the patient's life. As the nonspecific nature of the clinical history and physical finding, diagnosis of aortoenteric fistula is difficult to make preoperatively. There is no single diagnostic investigation which has a very high specificity and sensitivity, including upper computed tomography (CT), angiography or gallium 67 CT. Gastrointestinal endoscopies if positive is the most helpful method for diagnosis. If negative it is meaningless unless another source of bleeding is found. Nevertheless, exploratory laparotomy is the only method that can definitely confirm the diagnosis.

Here we present a case of secondary aortoduodenal fistula found 6 years after aortic reconstructive surgery, with the clinical presentation of upper gastrointestinal bleeding.

CASE REPORT

The patient was a 70 year old man who complained of hematemesis and melena. He gave a past history of aortic reconstructive surgery in Tehran 6 years prior to admission. There was no history of peptic ulcer disease or any other gastrointestinal pathology in the past.

On physical examination the patient appeared pale with a cold clammy skin in a pre shock condition. His vital signs were recorded as pulse rate 112/min. regular, respiratory rate 22/minute and blood pressure 90/60 mmHg. Chest wall, heart and

lungs were normal on physical examination. There was a median linear scar on his abdomen showing sign of previous abdominal surgery. Epigastrium was tender on palpation. None of the abdominal viscera was palpable. His past surgical records revealed aortobifemoral graft 6 years ago.

CT scan showed aneurismal mass around the graft. Ultrasound studies reported blood clots in the distal half of duodenum. On immediate exploratory laparotomy, we found hematomas around duodenum and pancreas adhered to the omentum. Proximal part of abdominal aorta was clamped. Blood clots were removed and duodenum was separated from aorta. There was no pus, so tissue culture was not done. We decided to perform a patch synthetic graft revascularization on the aortic side with the proximal suture line of aortic prosthesis. The intervention was concluded with an omentoplasty in order to protect the patch graft and to separate it from duodenorrhaphy.

During post operative period, the patient did not show any relevant complication. A specific antibiotic therapy was applied (ceftriaxone along with metronidazole and vancomycin). Control CT scan was carried out after one month and after 6 months. The repeated clinical and laboratory examination did not reveal any sign of infection. The primary digestive tract radiography did not show any sign of duodenal stenosis.

DISCUSSION

The diagnosis and the treatment of aorto enteric fistula are difficult and represent a big problem for a vascular surgeon (10). Nevertheless in a patient with hematemesis and melena with a history of aorto-bifemoral bypass or aortic interposition grafting without esophagogastroduodenal pathologies, a diagnosis of aorto enteric fistula should not be overlooked (11). In the present clinical case the available clinical, instrumental and radiological supports made the hypothesis of such a diagnosis very much presumable.

The esophagogastero-doudenoscopy showed no pathologies but a clot in second part of duodenum. These signs, associated with a high gastroesophageal bleeding and the past history of

aorto bifemoral bypass grafting 6 years ago lead to the diagnosis of aortoenteric fistula.

The longest postoperative interval for an aortoenteric fistula developed 23 years after aortofemoral bypass surgery; the shortest postoperative interval was 2 days, recorded in 1974, in which a para prosthetic-enteric fistula developed after resection of a ruptured abdominal aortic aneurysm with graft interposition (12). In our case the complication presented six years after aortic aneurysm reconstruction.

Both, in situ and the extra anatomical bypass grafting have been described in literature (13, 14). The treatment of choice is aortic ligation and axillofemoral bypass. It was reported that once the fistula identified, the surgical procedures most commonly employed are graft excision, over sewing of the aortic stump, repair of the gut defect and placing a new graft in situ or extra-anatomic bypass. The mortality rate during surgery and in the postoperative period is relatively high, averaging about 50-60% (13, 15).

Chang *et al.* from Taiwan have reported a similar case (15). They have reported secondary aortoenteric fistula in 80 years old person as immediate post operative complication after aortic reconstruction surgery that died on 20th day of primary surgery. That case could not survive probably due to massive blood loss, very old age and infection. Our case is younger one presenting after 6 years with melena and hematemesis which was diagnosed and managed promptly and surviving still.

Generally two types of secondary aortoenteric fistula have been described. Type 1, termed a true aortoenteric fistula or graft enteric fistula, with or without a pseudo aneurysm, develops between the proximal aortic suture line and the bowel. This type of fistula is the most common and often initiate massive gastrointestinal hemorrhage. The main clinical manifestation of this type is always upper gastrointestinal bleeding (76%), which might be either hematemesis or melena with equal frequency. Sepsis and abdominal pain are relatively rare with this type of fistula. The present case appearing 6 years aortic surgery was of this type.

Type 2, or a para- prosthetic enteric fistula, develops no communication between the bowel and

the graft. It accounts for 15-20% of secondary aortoenteric fistula. In this type of fistula, bleeding occurs from the edges of the eroded bowel by mechanical pulsations of the aortic graft. Sepsis is more frequently associated with this type of fistula (75%). In addition to sepsis, gastrointestinal hemorrhage (30%), abdominal pain (20%), septic emboli in the lower extremities, septic arthritis, multicentric osteomyelitis and hypertrophic osteoarthropathy have been described (13, 15).

The aim of this case report is to emphasize on early diagnosis and management of all Gastro intestinal bleeding cases, who have a previous history of aortic reconstructive surgery. Possibility of aortoenteric fistula should be considered in such cases. In selected cases, aortic reconstruction with patch graft, duodenorrhaphy and omentoplasty can represent a valid alternation and easy choice for aorto-enteric fistula without any complication.

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